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Static and dynamic buckling modes of spherical shells subjected to external pressure

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Abstract

© 2016, Allerton Press, Inc.We investigate the possibilities for simplification of previously proposed refined linearized equations of perturbedmotion to identify, by dynamic method, the buckling mode shapes of isotropic spherical shells undergoing external hydrodynamic pressure. In the analysis of classical flexural buckling shapes of spherical shells, it is shown that preserving of nonconservative parametric terms in governing equations of formulated problem, which are related with loading of the shell with follower pressure practically does not affect the value of critical load and the resulting bucklingmode shapes in shell.

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Keywords

analytical solution, critical load, dynamic method, follower and not follower forces, frequency of vibrations, hydrostatic pressure, refined equation of perturbed motion, shell, spherical shell, stability